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| APPLICATION NO.         | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------|-------------|----------------------|---------------------|------------------|
| 10/724,415              | 12/01/2003  | Hung-Chuan Pai       | PCI-11              | 1058             |
| 7590                    |             | 07/13/2006           | EXAMINER            |                  |
| Hung Chang Lin          |             | CHAN, RICHARD        |                     |                  |
| 8 Schindler Ct.         |             | ART UNIT             |                     |                  |
| Silver Spring, MD 20903 |             | PAPER NUMBER         |                     |                  |
|                         |             | 2618                 |                     |                  |
| DATE MAILED: 07/13/2006 |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                   |  |
|------------------------------|--------------------------------------|-----------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/724,415 | <b>Applicant(s)</b><br>PAI ET AL. |  |
|                              | <b>Examiner</b><br>Richard Chan      | <b>Art Unit</b><br>2618           |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 December 2003.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-13, 15 and 16 is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

*and 13 one*  
n Claim 1 ~~is~~ rejected under 35 U.S.C. 102(e) as being anticipated by Kappes (US 2004/0085146 A1)

With respect to claim 1, Kappes discloses the method of calibrating RC time constant of an RC filter using a differential amplifier 340 with a coupling capacitor C between each output terminal and each input terminal of the differential amplifier and a resistor R between each input terminal and each input reference signal comprises the steps of: using a calibration cycle to offset error of the differential amplifier. Paragraphs [0027-0030] and Claim 8.

With respect to claim 13, Kappes discloses the variable rate RC calibration circuit Fig.4 comprising: a differential amplifier with a first capacitor C.sub.0a within capacitor array 108 between the inverting input and the non-inverting output of said differential amplifier and a second capacitor C.sub.0b between the non-inverting input and the inverting output of said differential amplifier; first input programmable resistor R.sub.1a

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404 to said inverting input and second programmable resistor R.sub.1b to said non-inverting input of said differential amplifier, first switched capacitor equivalent resistor with capacitor a C.sub.1a to said inverting input, and second switched capacitor equivalent resistor with a capacitor C.sub.1b to said non-inverting input of said differential amplifier, and calibration signals of calibrating R.sub.1aC.sub.1a time constant and R.sub.1bC.sub.1b time constant in a first calibration cycle and a second calibration cycle to cancel the offset error of said differential amplifier. Paragraphs [0027-0030]

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kappes (US 2004/0085146 A1) in view of Balboni (US 2005/0073369 A1).

With respect to claim 2, Kappes discloses the method of calibrating RC time constant as described in claim 1, Kappes continues to disclose wherein the first calibration cycle uses as a first input reference signal, however Kappes does not disclose wherein the input reference signal is the sum of a common mode voltage V<sub>cm</sub>

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and a first reference voltage  $V_{ref1}$ , and a second input reference signal, which is the difference of  $V_{cm}$  minus a second reference voltage  $V_{ref2}$ , to said differential amplifier to generate a first dual-slope ramp signal; wherein the second calibration cycle repeats the first calibration cycle but using a reverse input reference signals to the differential amplifier to generate a second dual-slope ramp signal, and wherein the time slots for the first and second dual-slope ramp signals to reverse ramping direction and cross zero are used to calibrate the value of the capacitance of the RC time constant.

The Balboni reference however discloses wherein the RC calibration obtains the first input signal through the sum of a first and second reference voltage. Paragraph [0060] Balboni continues to disclose wherein a frequency difference detector is implemented to control the algorithm for the voltage controlled oscillated which calibrates the signal.

It would have been obvious to one of ordinary skill in the art to implement the method of obtaining a reference signal for RC time constant calibration as disclosed by Balboni with the method of RC time constant calibration as disclosed by Kappes in order to obtain a reference signal that will have changeable reference clock rates.

***Allowable Subject Matter***

Claims 3-12, and 14-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 3, the prior art does not specifically disclose wherein a predefined bit counter (N+1) is used to determine a first calibration cycle, and a control signal comprises a fixed duration period, and wherein the during the sub-duration periods an auto zeroing occurs.

With respect to claim 14, the prior art does not disclose wherein an RC calibration circuit the calibration cycles contain a first and second dual-slope ramp signal the time slots when the first and second dual-slope ramp signals reverse direction and cross zero are used to input a counter.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Abe reference (US 7,010,419) discloses a signal processor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Chan whose telephone number is (571) 272-0570. The examiner can normally be reached on Mon - Fri (9AM - 5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571)272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Richard Chan  
Art Division 2618  
07/07/06

  
NAY MAUNG  
SUPERVISORY PATENT EXAMINER